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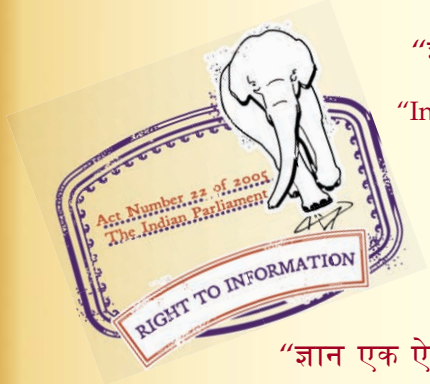
IS 8685 (1977): Aircraft lamps [ETD 23: Electric Lamps and their Auxiliaries]



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IS : 8685 - 1977

(Reaffirmed 2001)

Indian Standard
SPECIFICATION FOR AIRCRAFT LAMPS

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NEW DELHI 110002

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SPECIFICATION FOR AIRCRAFT LAMPS

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(*Continued on page* 31)

Indian Standard
SPECIFICATION FOR AIRCRAFT LAMPS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 4 November 1977, after the draft finalized by the Electric Lamps and Accessories Sectional Committee had been approved by the Electrotechnical Division Council.

0.2 In the preparation of this standard, assistance has been derived from the following:

IEC Pub 61-1(1969) Lamp caps and holders together with gauges for the control of interchangeability and safety. Part I: Lamp caps. International Electrotechnical Commission.

IEC Pub 434(1973) Recommendation for aircraft electrical filament lamps. International Electrotechnical Commission.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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1. SCOPE

1.1 This standard covers the technical requirements which ensure the quality and interchangeability of aircraft electrical filament lamps of 28 volts, for use in ambient temperature up to 50°C. It also includes the methods of test and the conditions of compliance.

NOTE 1 — When specified by the purchaser, the lamps can be delivered with bulb finishes other than those listed in Table 1. Lamps with such requirements shall, in their clear version, comply with the requirements as specified in this standard for clear lamps.

NOTE 2 — The specific requirements relating to each type of lamp are given in the relevant data sheets.

*Rules for rounding off numerical values (*revised*).

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

2.1 Rated Voltage — The voltage marked on the lamp.

2.2 Rated Current — The designed current of the lamp at its rated voltage.

2.3 Light Centre Length — The distance from the geometrical centre of the filament to the contact plate of the cap, including the solder.

2.4 Tests

2.4.1 *Inspection Test* — The test for visual, mechanical and physical characteristics.

2.4.2 *Rating Test* — The test for initial luminous and electrical characteristics.

2.4.3 *Life Test* — The test for duration of life and maintenance of luminous flux.

2.5 Type — Denotes lamps of the same general construction, irrespective of the type of cap, which are intended to be identical in photometric and electrical ratings.

2.6 Batch — Denotes all the lamps of one type put forward in a lot at one time for acceptance or all the lamps of one type which are subjected, on one occasion, to test for compliance with this standard.

2.7 Life — The number of hours a lamp operates until it is burnt out, when tested in accordance with the requirements of **6.5**.

2.8 Lumen Maintenance — The ratio of the luminous flux of the individual lamp at the specified time of measurement in life test, to that in the rating test.

2.9 Test Quantities

2.9.1 *Inspection Test Quantity* (*ITQ*) — The number of lamps selected from a batch according to an agreed method, the tests on which shall determine whether or not the batch complies with the mechanical and physical requirements specified in **4.1** and marking requirements specified in **4.4**.

2.9.2 *Rating Test Quantity* (*RTQ*) — The number of lamps selected from a batch according to an agreed method, the initial rating tests on which shall determine whether or not the batch complies with the initial rating requirements specified in **4.2**.

2.9.3 *Life Test Quantity* (*LTQ*) — The number of lamps selected from a batch according to an agreed method, on which the life test and measurements for individual lumens at 75 percent of the life in hours shall determine whether or not the batch complies with the life performance requirements specified in **4.3**.

3. CHARACTERISTICS OF LAMPS

3.1 The characteristics of the lamps are given in Table 1 and in the respective data sheets.

TABLE 1 TYPES OF AIRCRAFT LAMPS

(*Clauses* 1.1, 3.1 *and* 4.3.1)

International No.	Rated Voltage	Nominal Wattage	Rated Current	Rated Luminous Flux	Objective Life	Cap	Bulb Finish
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	V	W	A	lm	h		
301	28·0	4·8	0·17	37·7	500	BA15s	Clear
303	28·0	8·5	0·30	75·4	500	BA15s	Clear
305 305F	28·0	14·0	0·51	188	300	BA15s	Clear Inside frosted
307 307F	28·0	18·0	0·67	264	300	BA15s	Clear Frosted
311	28·0	36·0	1·29	628	300	BA15s	Clear
313	28·0	4·8	0·17	44	500	BA9s	Clear
327	28·0	1·1	0·04	4·1	1 000	SX6s	Clear
334	28·0	1·1	0·04	4·1	1 000	S5·7s	Clear
1 819	28·0	1·1	0·04	4·1	1 000	BA9s	Clear
1 820	28·0	2·8	0·10	21·8	1 000	BA9s	Clear

NOTE — Filament shape and configuration can be agreed between the manufacturers and the purchasers.

4. REQUIREMENTS

4.1 Mechanical and Physical Requirements

4.1.1 *Bulbs* — The bulb shall be uniform in shape and free from defects detrimental to service. A mirror finish when required, shall be durable, bright, free from pinholes and shall be applied over the area shown in the relevant data sheets. This finish may be applied either externally or internally.

4.1.2 *Caps* — The caps shall comply with Appendix A. The metal of the caps shall be corrosion resistant or suitably treated to resist corrosion caused by fuels, salt spray or atmospheric conditions as may be encountered in storage or normal service.

NOTE — Unless suitably protected against electrolytic corrosion, dissimilar metals shall not be used in intimate contact with each other.

4.1.3 *Attachment of Caps to the Bulb* — The caps shall be so constructed and attached to the bulb that they will withstand, during the inspection test at the end of the life test, the torque specified in Table 2, when the test is carried out in accordance with **6.4**. The torque shall be applied gradually using the appropriate torque test holder.

TABLE 2 TORQUE

Cap Type	International Sheet Number	Torque
(1)	(2)	(3)
		Nm
BA9s	7004-14-6	0·23
BA15s	7004-11A-5	1·15
S5·7s	7004-62-1	Not applicable
SX6s	7004-61-1	Not applicable

4.1.4 *Dimensions of Lamps* — The dimensions of the lamps shall be in accordance with the relevant data sheets.

4.1.5 *Solder* — Solder shall be so applied as not to interfere with the proper engagement in the holder and proper electrical contact.

Note — It is not essential that the whole surface of the eyelet should be covered with solder, provided there is good electrical contact between the lead-in wire and the eyelet. The soldering is done with the protecting portion and the wire above the solder not more than 1 mm.

4.2 Initial Rating Requirements — Initial ratings shall be in accordance with requirements specified in the relevant data sheets. Initial photometric measurements shall be made only after an ageing period of approximately 1 hour at rated voltage.

4.2.1 Initial lumens of individual lamps shall be not less than the values given in the relevant data sheets.

4.3 Life Performance Requirements — The average life, individual lamp life and individual lumen at 50 percent ±25 hours of the life stated in the relevant data sheets shall comply with the requirements specified in **4.3.1** and **4.3.2**.

4.3.1 *Average Life* — Average life shall be not less than the life stated in Table 1 subject to the following allowances:

Number of Lamps in Life Test	*Percentage Allowance in Average Life**
13	12
14 to 16	11
17 ,, 19	10
20 ,, 22	9
23 ,, 25	8

4.3.2 *Individual Lamp Requirement* — A lamp shall have:

a) a life of not less than 60 percent of the values given in the relevant data sheets subject to the qualifying limits specified in **7.4**(b); and

b) lumen maintenance at 50 percent $\pm$25 hours of life for various types of aircraft lamps shall be not less than the values as stated in the relevant data sheets.

NOTE — If a lamp does not comply with (b) above, it shall be considered to have failed at 59 percent of life.

4.4 Marking — Except where exempted the lamp shall be distinctly and indelibly marked, preferably on the cap with:

a) rated voltage and nominal wattage,

b) manufacturer's identification,

c) international reference number, and

d) country of manufacture.

4.4.1 Cartons and containers shall bear the international reference number.

4.4.2 The lamps may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

*These figures are statistical allowances to take into account the relatively small sizes of the samples taken for life tests.

5. SELECTION OF LAMPS FOR TESTS (SAMPLING)

5.1 Samples for testing shall be selected from lamps belonging to one batch.

5.1.1 *Batch Consisting of 1 000 Lamps or Less* — For batches consisting of 10 or less containers, lamps shall be selected from every container. If the batch consists of more than 10 containers, lamps shall be selected from at least one half of the total number of containers in the batch with a minimum of 10 containers.

5.1.2 *Batch Consisting of More than 1 000 Lamps* — Lamps shall be selected as far as possible from one-third of the total number of containers in the batch, with a minimum of 10 containers.

5.2 Inspection Test Quantity (ITQ) — Inspection test quantity shall consist of 5 percent of the batch with, however, a minimum of 35 and a maximum of 70 lamps.

5.3 Rating Test Quantity (RTQ) — This shall be five-sevenths of the LTQ and shall be chosen at random from the lamps of the LTQ which satisfy the individual lamp requirements of the inspection test. If a fraction results from the calculation, the next higher whole number shall be taken.

5.4 Life Test Quantity (LTQ) — This shall be one half of the RTQ and shall be chosen at random from the lamps of the RTQ which satisfy the individual lamp requirements of the rating test. If a fraction results from the calculation, the next higher whole number shall be taken.

5.5 Spare Lamps (Breakages) — Lamps which accidentally break during the test, shall when necessary, be replaced to ensure that the required number of lamps complete the test. The results obtained with the replacement lamp shall be substituted for those of the broken lamp.

NOTE — In order to avoid unnecessary delay, it is recommended that spare lamps be carried through the tests.

5.6 Lamps with Mirror Finish — For lamps with mirror finish, additional equal test quantities of equivalent clear lamps will be required for the rating and lumen maintenance tests. The life test shall be made on lamps with a mirror finish.

6. TESTS

6.1 Visual Examination and Checking for Mechanical and Physical Requirements — Each lamp of ITQ shall be examined visually as well as checked for physical and mechanical requirements detailed in **4.1** and marking requirements specified in **4.4**.

6.2 Ageing — The lamps shall be aged to ensure stability before measurement. Duration of ageing shall be 1 hour at rated voltage with the lamp horizontal.

6.3 Initial Rating Test

6.3.1 *Position of Burning* — Lamp shall burn in vertical position with the cap uppermost.

6.3.2 *Test Voltage* — The lamp shall be operated at its rated voltage as given in the relevant data sheets for various types of aircraft lamps and shall be measured with a voltmeter of Class Index **0·5** of IS : 1248-1968*.

6.3.3 *Photometry* — A suitable integrating photometer shall be used. For a lamp with a mirror finish the measurements shall be made with an equivalent clear lamp.

6.3.4 *Initial Luminous and Electrical Characteristics* — After the ageing period specified in **6.2**, the lamps shall be tested for conformity with the values given in the relevant data sheets for maximum individual current and minimum luminous flux.

6.4 Torsion Test — Lamp shall be inserted in a special holder and fixed to a suitable torsion testing machine. The test shall then be carried out by twisting the bulbs.

6.5 Life Test

6.5.1 *Operating Position*

6.5.1.1 For life test the lamp shall be operated horizontally in free air.

6.5.1.2 For photometry during the life test the lamp shall be operated vertically with the cap uppermost.

6.5.2 *Test Voltage* — This shall be the rated voltage for both the life test and photometry during the life test.

6.5.3 *Electricity Supply and Control* — The electricity supply for the life test shall be alternating current with a nominal frequency between 40 and 60 Hz.

The test voltage throughout the life test shall not depart from the rated voltage by more than 1 percent of the value given in the relevant data sheets for various types of aircraft lamps, and there shall be no significant departure of the average value throughout the life test period from the rated voltage. A record shall be kept throughout the life test by a recording voltmeter.

6.5.4 *Life Test Procedure* — Each lamp of the LTQ shall be operated on the electricity supply specified, until the end of its life. It shall be switched off twice during every 24 hours of operation for periods of not less than 15 minutes each, such periods not being considered as part of the life of the lamp.

6.5.4.1 For the purpose of computing average life of LTQ, lamps operating beyond 125 percent of the specified life in the life test shall be deemed to have a life equal to 125 percent of the specified life only.

*Specification for direct acting electrical indicating instruments (*first revision*).

6.5.5 *Measurements During Life Test* — The luminous flux of each lamp shall be measured at half the specified life ± 24 hours. For a lamp with a mirror finish the measurement shall be made on an equivalent clear lamp.

6.5.6 *Life and Lumen Maintenance* — The life and lumen maintenance of the lamps shall be in conformity with the values given in the standard tables, subject to the allowances specified in **7.4**.

6.6 Air Leakage and Blackening Tests

6.6.1 The lamps shall be stored for at least 7 days after manufacture. All lamps then shall be tested for air leakage; in case any lamp fails, will be rejected.

6.6.2 Any number of lamps up to 10 percent of the batch (with, however, a minimum of 50 lamps) shall be selected and shall then be burnt horizontally in an open test rack on either direct or alternating current for 2 minutes, at a voltage 5 percent over rated volts. While burning, the lamps shall be carefully scrutinized for air leakage indicated by white sheets on the bulb above the filament, and also for signs of abnormally defined blackening. The lamps shall then be allowed to stand at least for 12 hours, after which they shall be burnt again at 5 percent over rated volts for sufficient time, say 15 seconds to observe whether air leakage has occurred in any of the lamps as a result of the previous 2 minutes burning.

6.6.3 Should more than one plus 4 percent of the lamps tested fail either as regards to air leakage or blackening, the whole batch shall be tested.

6.7 Vibration Requirements — Under consideration.

7. CONDITIONS OF COMPLIANCE

7.1 General — If any test quantity fails to satisfy any of the requirements of **7.2**, **7.3** and **7.4**, and batch shall be rejected and no subsequent tests shall be carried out from the batch (*see also* Appendix B).

7.2 Mechanical and Physical Requirements and Marking — A batch shall be considered to comply with the requirements of **4.1** and **4.4** if the number of lamps failing does not exceed the qualifying limits given below :

Test Quantity	*Qualifying Limit*
a) For any single requirement	
35 to 54	3
55 to 70	4
b) For all requirements taken together	
35 to 44	5
45 to 56	6
57 to 70	7

7.3 Initial Ratings — A batch shall be considered to comply with initial rating requirements (*see* **4.2**) if the number of lamps failing does not exceed the qualifying limits given below:

Test Quantity	*Qualifying Limit*
a) For initial maximum current of individual lamps	
25 to 33	5
34 ,, 41	6
42 ,, 50	7
b) For initial lumens of individual lamps	
25 to 33	5
34 ,, 41	6
42 ,, 50	7
c) For initial maximum current and initial lumens of individual lamps taken together	
25 to 28	7
29 ,, 35	8
36 ,, 41	9
42 ,, 48	10
49 ,, 50	11

7.4 Life Performance — A batch shall be considered as complying with life performance requirements (*see* **4.3**) if:

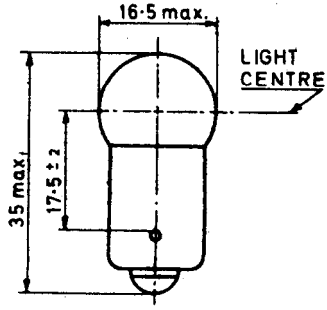
a) the average life of the life test quantity attains the value specified in **4.3.1** subject to the allowance specified therein, and

b) the number of lamps failing in respect of individual life and lumens of individual lamps at 50 percent of life (*see* **4.3.2**) does not exceed the qualifying limits given below:

Test Quantity	*Qualifying Limit*
12 to 15	3
16 ,, 23	4
24 ,, 25	5

DATA SHEET 1 4·8 W CLEAR FINISH LAMP, INTERNATIONAL REFERENCE NUMBER 301

(All dimensions in millimetres)

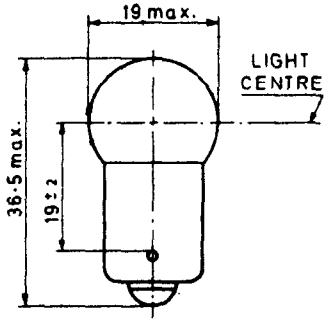


Cap type	BA15s
Test voltage	28
Nominal watts	4·8
Maximum current (A) (individuals)	0·193
Minimum lumens (individuals)	30
Objective life (hours)	500
Lumen maintenance (percent)	77

NOTE — Filament shape and configuration can be agreed between the manufacturers and the purchasers.

DATA SHEET 2 8·5 W CLEAR FROSTED LAMP, INTERNATIONAL REFERENCE NUMBER 303

(All dimensions in millimetres)



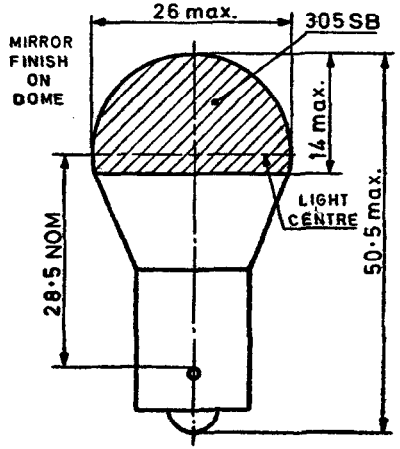
Cap type	BA15s
Test voltage	28
Nominal watts	8·5
Maximum current (A) (individuals)	0·34
Minimum lumens (individuals)	60
Objective life (hours)	500
Lumen maintenance (percent)	75

NOTE 1 — Frosting may be applied externally.

NOTE 2 — Filament shape and configuration can be agreed between the manufacturers and the purchasers.

DATA SHEET 3 0·51 Amp, CLEAR INSIDE FROSTED MIRROR FINISH LAMP, INTERNATIONAL REFERENCE NUMBER 305 AND 305 IF

(All dimensions in millimetres)

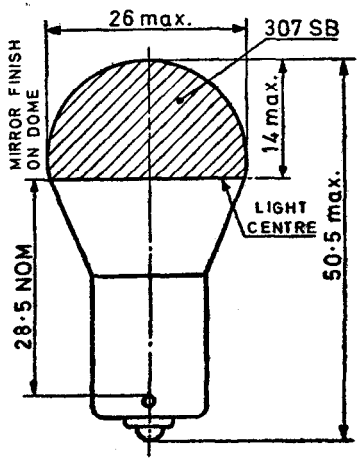


Cap designation	BA15s
Test voltage	28
Nominal watts	14
Maximum current (A) (individuals)	0·57
Minimum lumens (individuals)	150
Objective life (hours)	300
Lumen maintenance (percent)	85

NOTE — Filament shape and configuration can be agreed between the manufacturers and the purchasers.

DATA SHEET 4 18 W WITH CLEAR FROSTED MIRROR FINISH LAMP, INTERNATIONAL REFERENCE NUMBER 307

(All dimensions in millimetres)

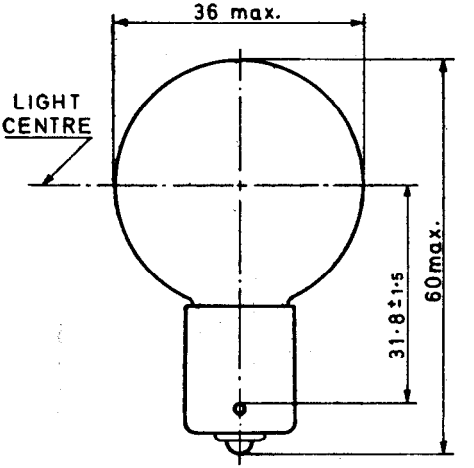


Cap type	BA15s
Test voltage	28
Nominal watts	18
Maximum current (A) (individuals)	0·74
Minimum lumens (individuals)	210
Objective life (hours)	300
Lumen maintenance (percent)	85

NOTE — Filament shape and configuration can be agreed between the manufacturers and the purchasers.

DATA SHEET 5 36 W CLEAR FINISH LAMP, INTERNATIONAL REFERENCE NUMBER 311

(All dimensions in millimetres)

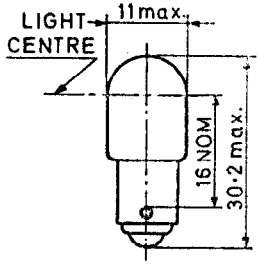


Cap type	BA15s
Test voltage	28
Nominal watts	36
Initial characteristics:	
Maximum current (A) (individuals)	1·46
Minimum lumens (individuals)	500
Objective life (hours)	300
Lumen maintenance (percent)	85

NOTE — Filament shape and configuration can be agreed between the manufacturers and the purchasers.

DATA SHEET 6 48 W CLEAR FINISH LAMP, INTERNATIONAL REFERENCE NUMBER 313

(All dimensions in millimetres)

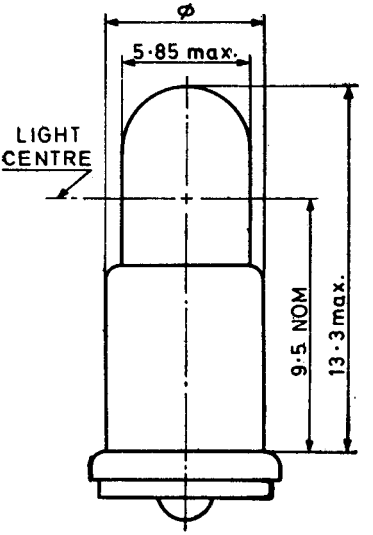


Cap type	BA9s
Test voltage	28
Nominal watts	4·8
Initial characteristics:	
Maximum current (A) (individuals)	0·193
Minimum lumens (individuals)	36
Objective life (hours)	500
Lumen maintenance (percent)	77

NOTE — Filament shape and configuration can be agreed between the manufacturers and the purchasers.

DATA SHEET 7 1·1 W CLEAR FINISH LAMP, INTERNATIONAL REFERENCE NUMBER 327

(All dimensions in millimetres)



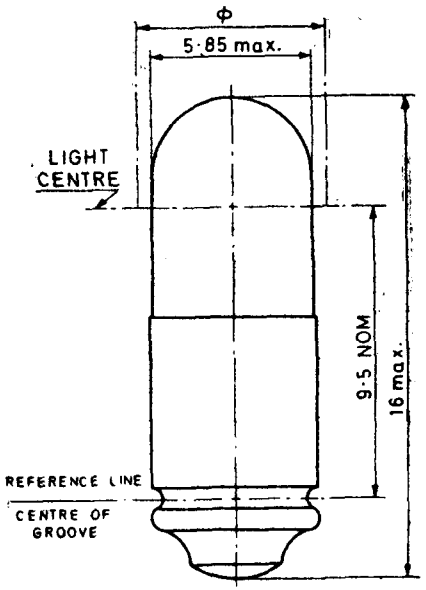
ϕBulb and cylindrical portion of cap to enter a cylindrical hole 6·375±0·005 dia×13·5 deep (*Min*).

Cap type	SX6s
Test voltage	28
Nominal watts	1·12
Initial characteristics:	
Maximum current (A) (individuals)	0·046
Minimum lumen (individuals)	2·6
Objective life (hours)	1 000
Lumen maintenance (percent)	77

NOTE — Filament shape and configuration can be agreed between the manufacturers and the purchasers.

DATA SHEET 8 0·04 A, CLEAR FINISH LAMP, INTERNATIONAL REFERENCE NUMBER 334

(All dimensions in millimetres)



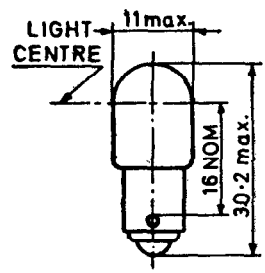
ϕ No part of the bulb shall protrude beyond a 6·35 diameter cylinder which is coaxial with the base.

Nominal watts	1·1
Cap designation	S5·7s
Test voltage	28
Maximum current (A) (individuals)	0·046
Minimum lumens (individuals)	2·6
Objective life (hours)	1 000
Lumen maintenance (percent)	75

NOTE — Filament shape and configuration can be agreed between the manufacturers and the purchasers.

DATA SHEET 9 1·1 W CLEAR FINISH LAMP, INTERNATIONAL REFERENCE NUMBER 1819

(All dimensions in millimetres)

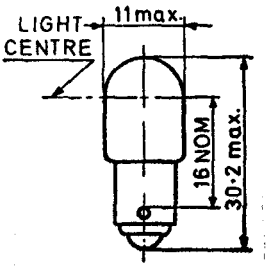


Cap type	BA9s
Test voltage	28
Nominal watts	1·12
Maximum current (A) (individuals)	0·046
Minimum lumens (individuals)	2·95
Objective life (hours)	1 000
Lumen maintenance (percent)	77

NOTE — Filament shape and configuration can be agreed between the manufacturers and the purchasers.

DATA SHEET 10 2·8 W CLEAR FINISH LAMP, INTERNATIONAL REFERENCE NUMBER 1820

(All dimensions in millimetres)



Cap type	BA9s
Test voltage	28
Nominal watts	2·8
Maximum current (A) (individuals)	0·114
Minimum lumens (individuals)	14·7
Objective life (hours)	1 000
Lumen maintenance (percent)	77

NOTE — Filament shape and configuration can be agreed between the manufacturers and the purchasers.

APPENDIX A

(*Clause* 4.1.2)

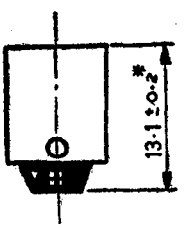
DIMENSIONS OF CAPS FOR AIRCRAFT LAMPS

A-1. The dimensions of caps shall be in accordance with the following data sheets.

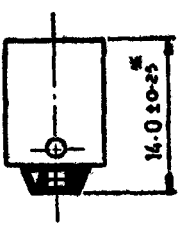
DATA SHEET NO. 7004-14-6 BAYONET AUTOMOBILE CAPS BA9

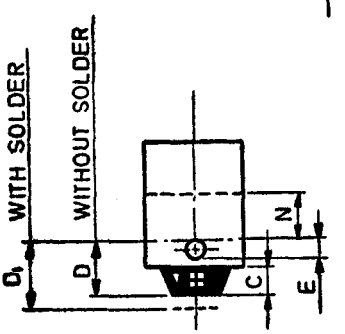
(All dimensions in millimetres)

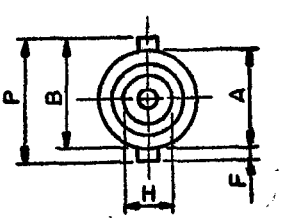
BA 9S/13



BA 9S/14







Caps may be made with a flare the diameter* of which shall be not more than 0·5 mm greater than the maximum permissible diameter of the corresponding cap without a flare.

*These dimensions are solely for cap design and are not to be gauged on the finished lamp.

(*Continued*)

DATA STEET NO. 7004-14-6 BAYONET AUTOMOBILE CAPS BA9 — *Contd*

DIMENSION	STANDARD DIMENSIONS			
	Unmounted Caps*		Caps on Finished Lamps	
	Min	*Max*	*Min*	*Max*
(1)	(2)	(3)	(4)	(5)
A †	9·08	9·20	9·08	9·25
B ‡	9·75	10·11	9·75	10·16
C	1·5	—	—	—
D	4·3	5·2	—	—
D_1	—	—	4·3	5·9
E	1·5	1·7	1·5	1·7
F ‡	0·64	—	0·64	—
H §	3·5	4·0	3·5	4·0
N †	4·5	—	4·5	—
P	—	10·95	—	11·0

*The values shown below are solely for cap design and are not to be gauged, unless specified otherwise.

†Dimension *N* denotes the minimum length over which dimension *A* shall conform; below this length, dimension *A*, *Max* shall not be exceeded.

‡The radius of the edge of the relevant pin shall not exceed 0·2 mm when dimension *B* is at the minimum value of 9·75 mm. If dimension *B* exceeds 9·75 mm, the radius may be increased accordingly. This requirement applies only to the half of the edge adjacent to the bulb.

§This dimension is checked with a millimetre scale.

DATA SHEET NO. 7004-11A-5 BAYONET AUTOMOBILE CAPS BA15s

(All dimensions in millimetres)

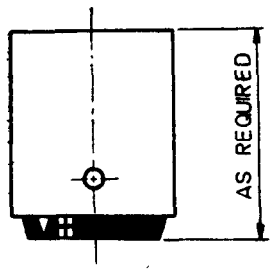


Fig. 1

Recommended lengths —17·5±0·25 mm*, 19·0±0·25 mm* and 21·0±0·25 mm*

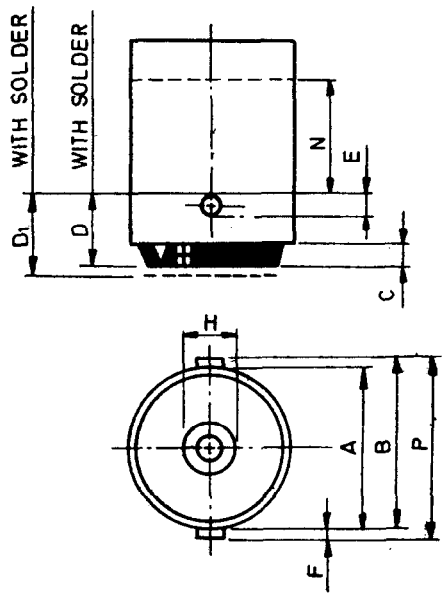


Fig. 2

Caps may be made with a flare the diameter* of which shall be not more than 1 mm (0·039 in) greater than the maximum permissible diameter of the corresponding cap without a flare.

*These dimensions are solely for cap design and are not to be gauged on the finished lamp.

(*Continued*)

DATA SHEET NO. 7004-11A-5 BAYONET AUTOMOBILE CAPS BA15s — *Contd*

DIMENSION	STANDARD DIMENSIONS			
	Unmounted Caps*		Caps on Finished Lamps	
	Min	*Max*	*Min*	*Max*
A†	15·05	15·25	15·05	15·30
B‡	15·65	16·10	15·65	16·15
C	1·5	—	—	—
D	6·0	6·6	—	—
D_1	—	—	6·32	7·5
E	1·8	2·2	1·8	2·2
F‡	0·64	—	0·64	—
H§	4·5	5·2	4·5	5·2
N†	8·9	—	8·9	—
P	—	16·95	—	17·0

*The values shown below are solely for cap design and are not to be gauged, unless specified otherwise.

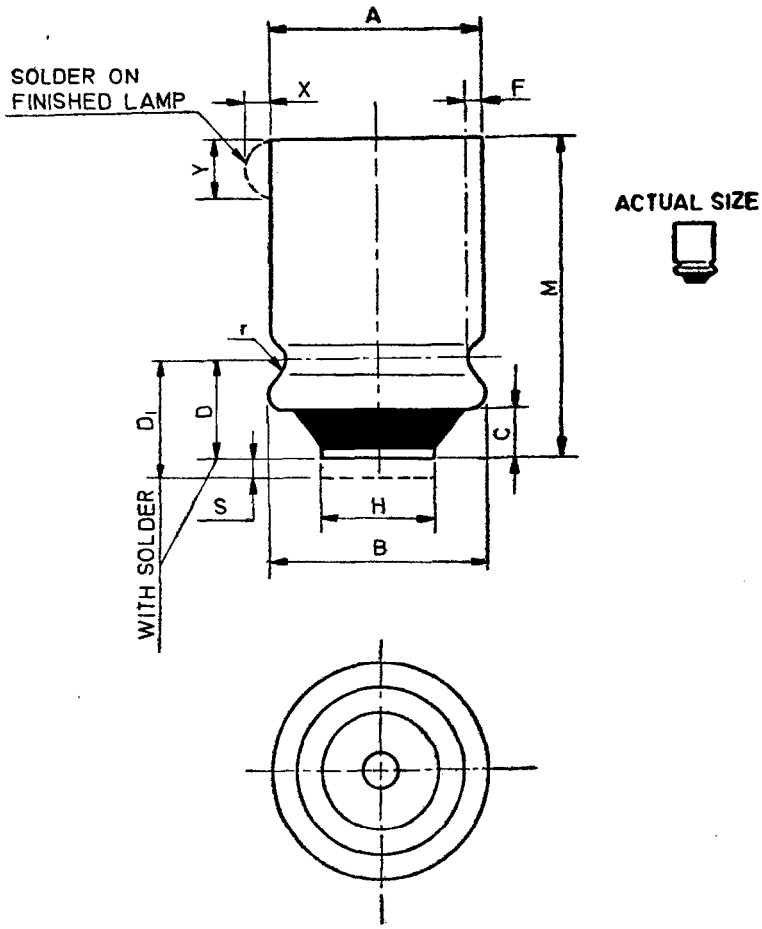
†Dimension *N* denotes the minimum length over which dimension *A* shall conform. However, in view of possible ovality, the value of dimension *A* may, in some directions in any horizontal plane, be less than the minimum value specified provided that, in at least one other direction in the same plane, the value exceeds 15·05 mm. Thus it would not be possible for any horizontal section of the shell, within the dimension *N*, to enter a 'No Go' ring gauge of 15·05 mm. Below dimension *N*, dimension *A* maximum shall not be exceeded.

‡The radius of the relevant pin shall not exceed 0·2 mm when dimension *B* is at the minimum value of 15·65 mm. If dimension *B* exceeds 15·65 mm, the radius may be increased accordingly. This requirement applies only to the half of the edge adjacent to the bulb.

§This dimension is to be checked with a millimetre scale.

DATA SHEET NO. 7004-62-1 GROOVED CAP S5·7s

(All dimensions in millimetres)



Caps may be made with a flare the diameter* of which shall be not more than 0·5 mm greater than the maximum permissible diameter of the corresponding cap without a flare.

*These dimensions are solely for cap design and are not to be gauged on the finished lamp.

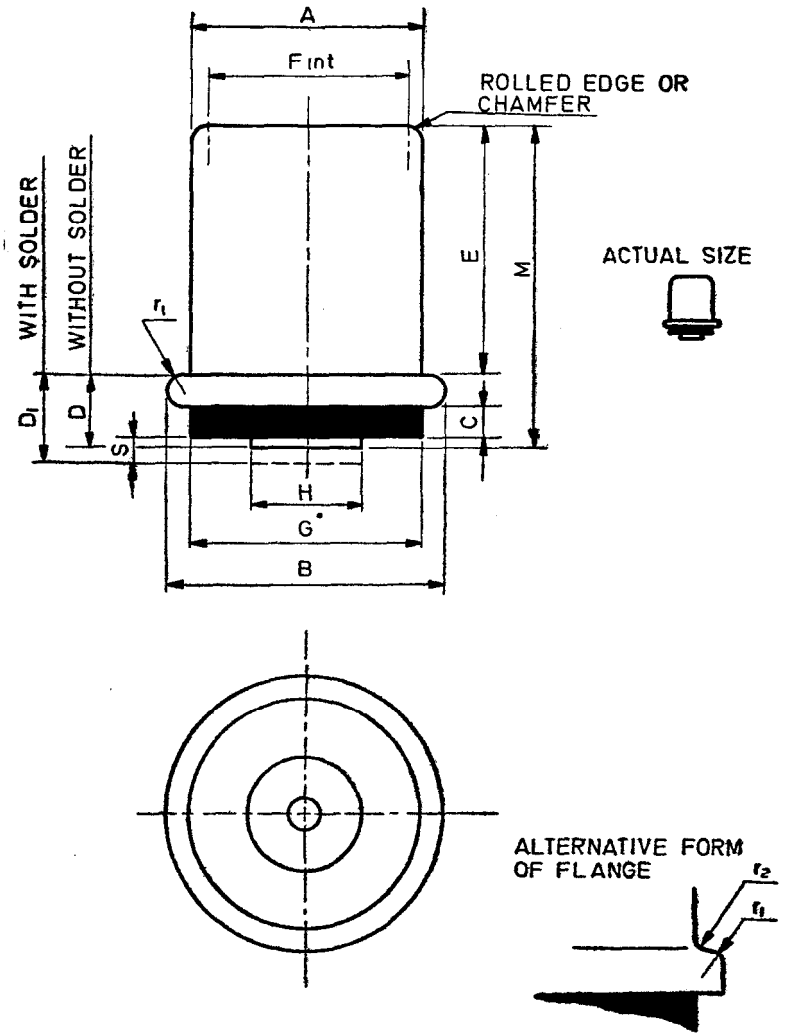
(Continued)

DATA SHEET NO. 7004-62-1 GROOVED CAP S5·7s — *Contd*

DIMENSION	STANDARD DIMENSIONS	
	Min	*Max*
A	5·56	5·82
B	5·51	5·72
C	0·8	—
*D**	1·7	2·7
D_1	2·4	3·3
*F**	Approx 0·4	—
H	—	3·2†
*M**	8·10	8·65
S	0·4	—
X	—	0·76
Y	—	2·3
*r**	0·38	0·51

*These dimensions are solely for cap design and are not to be gauged on the finished lamp.
†This dimension is checked with a millimetre scale.

DATA SHEET No. 7004-61-1 FLANGED CAP SX6s



A solder hole in the cylindrical part is permissible except that on finished lamps, the diameter, including the solder, shall not exceed *A Max.*

(Continued)

DATA SHEET No. 7004-61-1 FLANGED CAP SX6s — *Contd*

The radiused edge (r_1) is required in order that a grip may be obtained with the finger nails during removal of a lamp. A chamfer or other suitable shape is permissible as an alternative to r_1.

Dimension	Standard Dimensions	
	Min	*Max*
A	6·1	6·35
B	7·11	7·37
C	0·6	—
*D**	1·45	2·0
D_1	1·7	2·8
E	6·35	6·86
*F**	Nom 5·44	—
G	6·22	6·98
H	2·54	3·30
*M**	Approx 8·4	—
S	0·38	—
r_1	Approx 0·3	—
r_2	—	0·2

*These dimensions are solely for cap design and are not to be gauged on the finished lamp.

APPENDIX B

(*Clause* 7.1)

STATISTICAL BASIS OF TEST QUANTITIES AND CONDITIONS OF COMPLIANCE

B-1. The acceptance limits given under **7.2**, **7.3** and **7.4** are such that there is at least a 0·975 (39 out of 40) probability of compliance provided that the bulk of the manufacturer's production contains:

a) not more than 2 percent failing any single requirement under **4.1** and **4.4** and not more than 5 percent failing the requirements combined,

b) not more than 7 percent failing the requirements for initial ratings when each is taken separately and not more than 10 percent when these requirements are combined, and

c) not more than 8 percent failing the individual life at 60 percent of objective life and lumen requirements at 50 percent ±25 hours of nominal objective life.

(*Continued from page* 2)

Members	*Representing*
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SHRI B. R. SAMARIA	Indian Air lines, New Delhi
SHRI K. S. SARMA	National Physical Laboratory (CSIR), New Delhi

INDIAN STANDARDS

ON

ELECTRICAL LAMPS AND ACCESSORIES

IS:

418-1963 Tungsten filament general service electric lamps (*second revision*)
897-1966 Tungsten filament electric lamps for railway rolling stock (*first revision*)
1258-1967 Bayonet lampholders (*first revision*)
1534 (Part I)-1977 Ballasts for fluorescent lamps: Part I For switch start circuits (*second revision*)
1569-1976 Capacitors for use in tubular fluorescent, high pressure mercury and low pressure sodium vapour discharge lamp circuits (*first revision*)
1606-1966 Automobile lamps (*revised*)
1885 (Part XVI/Sec 3)-1967 Electrotechnical vocabulary: Part XVI Lighting, Section 3 Lamps and auxiliary apparatus
1901-1961 Visual indicator lamps
2183-1973 Schedule for high pressure mercury vapour lamps (*first revision*)
2215-1968 Starters or fluorescent lamps (*second revision*)
2261-1975 Lamps for flashlights (*first revision*)
2262-1963 Transformers for high voltage luminous discharge tubes
2407-1963 Photometric integrators
2418 (Part I)-1977 Tubular fluorescent lamps for general lighting service: Part I Requirements and tests
2418 (Part II)-1977 Tubular fluorescent lamps for general lighting service: Part II Standard lamp data sheets
2418 (Part III)-1977 Tubular fluorescent lamps for general lighting service: Part III Dimensions of G-5 and G-13 bi-pin caps
2418 (Part IV)-1977 Tubular fluorescent lamps for general lighting service: Part IV Go and no-go gauges for G-5 and G-13 bi-pin caps
2592-1964 Lamps for lighting on board ships
2596-1964 Bulbs (lamps) for miners' cap-lamps
3323-1965 Bi-pin lampholders for tubular fluorescent lamps
3324-1965 Holders for starters for tubular fluorescent lamps
6616-1972 Ballasts for high pressure mercury vapour lamps
6701-1972 Tungsten filament miscellaneous electric lamps
7013-1973 Schedule for radio dial lamps
7023-1973 Methods of tests for high pressure mercury vapour lamps
7027-1973 Transistorized ballasts for fluorescent tubes